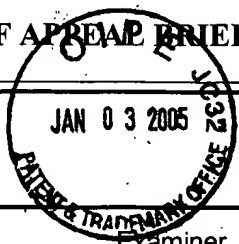


AF / JZW

<b>TRANSMITTAL OF APPEAL BRIEF (Large Entity)</b>	Docket No. <b>05400005AA</b>
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In Re Application Of: Myers, Jr., et al.

Application No. <b>09/631,694</b>	Filing Date <b>08/03/2000</b>	Examiner <b>T. Stevens</b>	Customer No. <b>30743</b>	Group Art Unit <b>2123</b>	Confirmation No. <b>9229</b>
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Invention: **Internet Based Product Data Management (PDM) System**

COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on 11/01/2004

The fee for filing this Appeal Brief is: **\$500.00**

- ☒ A check in the amount of the fee is enclosed.
- ☐ The Director has already been authorized to charge fees in this application to a Deposit Account.
- ☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **50-2041**
- ☐ Payment by credit card. Form PTO-2038 is attached.

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Signature

Dated: **January 3, 2005**

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CC:



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re patent application of  
Kenneth N. Myers, Jr., et al. Appeal No.:  
Serial No.: 09/631,694                      Group Art Unit: 2123  
Filed: 08/03/2000                      Examiner: T. Stevens  
Conf. No.: 9229  
For: INTERNET BASED PRODUCT DATA MANAGEMENT (PDM) SYSTEM  
(As Amended)

Commissioner for Patents  
United States Patent and Trademark Office  
P. O. Box 1450  
Alexandria, Virginia 22313-1450

BRIEF OF APPELLANTS UNDER 37 C.F.R. 1.192(c)

Sir:

Applicants have, on November 1, 2004, filed a timely Notice of Appeal from the action of the Primary Examiner in finally rejecting claims 1 - 21 in this application. Attached is a check in the amount of \$500.00 to cover the fee for filing this appeal brief.

REAL PARTY IN INTEREST

The real party in interest in this appeal is Lockheed Martin Corporation, a corporation of the State of Maryland, assignee of the entire interest on the above-identified application.

RELATED APPEALS AND INTERFERENCES

The appellants, their legal representative and the assignee is presently unaware of any appeal or

interference which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

#### STATUS OF THE CLAIMS

Claims 7, 11, 12, 16, 19 and 21 stand finally rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 1 - 21 stand provisionally rejected under 35 U.S.C. §101 for double patenting in view of U. S. Patent Application 09/666,545.

Claims 1 - 21 stand finally rejected under 35 U.S.C. §103 as unpatentable over Hara et al. in view of McQuay.

#### STATUS OF AMENDMENTS

The Advisory Action of October 26, 2004, indicates that the proposed amendment of September 10, 2004, will be entered for purposes of this Appeal. All prior amendments have been entered.

#### SUMMARY OF THE INVENTION

The invention is directed to a collaborative engineering environment (CEE), particularly for design of complex systems. It is a generalized goal of such CEE arrangements to allow as broad a range of persons involved in different aspects or "domains" of the design to access current data concerning the design and including new contributions to and developments of the design by other collaborators of a multi-disciplinary design team as rapidly and conveniently as possible over a network.

However, a problem arises, particularly in known document-centric approaches (in which design developments are accessed as documents which are changed as the design progresses), when persons responsible for development of different domains of the design must use different tools to perform work on the design where the tools are not all compatible with each other in regard to data and database organization and format. (Changes in the documents are not easily made in response to work done using various domain-specific tools and data in the documents is not readily input to the tools while changes in the documents cause loss of historical documentation concerning the design.) Further, particularly in document-centric traditional CEE systems, data is lost as the product being designed approaches completion, particularly in regard to consideration of design alternatives and decisions. (Page 2, first paragraph) These problems are particularly aggravated as designs become more complex and involve much more disparate domains of involvement in the design such as projection of maintenance of repair of the designed system over its lifetime using a cost as independent variable (CAIV) approach.

The invention approaches these problems by providing an associative information model (also referred to simply as a "product model" - page 8, lines 4 - 5) within an object oriented database to provide a persistent understanding of product information assets (page 7, lines 8 - 9). The associative product model is designed for the particular enterprise of design of interest to include all data defined for use in implemented domains, forming a complete specification for the system being designed (page 8, lines 4 - 10) and thus associates the implemented domains to enhance cross-domain collaboration, even using different tools specific to

disparate domains of the design enterprise. All domains involved in the enterprise need not be initially implemented but can be incrementally added easily during the course of the design (page 8, lines 11 - 19).

The basic architecture and function of the invention is well-illustrated in Figures 2 - 4. Figure 2 illustrates the interaction of an arbitrary domain of the design enterprise with the associative information (or "product") model 231, as described on pages 8 and 9 of the specification. A collaborator accesses data in the associative information model 231 from a user interface 201 and through information transformation services 211 (which transforms data (in a form in which it exists in a domain-specific tool) to and from a generalized form (as it exists in the associative information model) and information management services 221. This layered architecture allows current data to be shared by tools specific to all implemented domains as soon as it is stored in the database implemented as an associative information model by the tool used to further develop the design.

The information flow for any given user/collaborator is illustrated in Figure 3 and discussed on page 9. Following the sequence of circled numerals, the user communicates with the interface 305 to launch a (domain-specific) tool and thereafter communicate with the CEE through the tool to access data from the database/associative information model 307 (through information transformation services in interface 305) operate upon the data and then save transformed data to the database/associative information model. Figure 4, discussed on pages 9 and 10 illustrates how different tools 402, 404 are used in accordance with different domains 401, 403, 405 but all communicate with common

portions of the associative information model 407 through information transformation services 409 which is essentially transparent to the process. Figure 4 also illustrates the compatibility of the invention with traditional document distribution and access (e.g. as in a known document-centric arrangement) and may be useful in visualizing the distinction of the invention therefrom. Figure 5 is similar to Figure 4 but illustrates the association of different users/collaborators with different concurrent design enterprises in accordance with the invention.

#### ISSUES

A. Are claims 7, 11, 12, 16, 19 and 21 indefinite under 35 U.S.C. §112, second paragraph?

B. Is the subject matter of claims 1 - 21 the same as (or not patentably distinct from the subject matter claimed in U. S. Patent Application 09/666,545?

C. Is the subject matter of claims 1 - 21 obvious over the combined teachings of Hara et al. and McQuay under 35 U.S.C. §103?

#### GROUPING OF CLAIMS

The rejected claims do not all stand or fall together. The reasons why appellants consider the rejected claims to be separately patentable are set out in the following section, entitled "ARGUMENT". However, claims 10 and 15 are considered to stand or fall with the claims from which they depend.

## ARGUMENT

### The Prior Art

#### Hara et al.

Hara et al. describes a Cooperative Environment for Enterprise-computing (CEE) which appears to be similar, as least in general goals to the CEE of the present invention and, for that matter, all other CEE approaches. The CEE of Hara et al. operates based on an enterprise model which consists of the organization, business function/process information and resources such as persons and documents, as noted in the abstract thereof, in particular. The basic function and mode of operation of Hara et al. is concurrent engineering *by document sharing* over a network arrangement (section 4.2). Section 4.3 explicitly states that the CEE arrangement of Hara et al. is "document-based". The status of documents during the process and various stages of modification by designers is extracted and it appears that a Gantt chart is developed to communicate the relationship of different domains.

#### McQuay

McQuay is also directed to a CEE arrangement and is largely a discussion of the use of virtual prototyping to enhance cross-domain collaboration. McQuay acknowledges the existence of domain-specific resources used in the design and notes that such domain-specific resources must be integrated for cross-domain collaboration using virtual prototyping (paragraph bridging pages 259 - 259).

As noted at page 260, right-hand column, second full paragraph, McQuay contemplates that "disparate data format issues" are resolved by middleware but provides no details of doing so.

### The Claimed Invention

The invention, as recited in independent apparatus claims 1 and 16 recite as a combination of elements, a database, an information management service, an information transformation service and a domain user interface. These claims also explicitly recite that the database includes an associative information model. Similarly, method claim 12 recites the steps of specifying and documenting an associative information model, mapping requirements of the associative information model into a database, generating an information transformation service, accessing data in the database where the data is part of a current baseline and performing domain tasks using domain specific applications together with formatting and storing the results of the domain specific applications to be immediately accessible.

Claims 2 and 14 recite that the communication is performed with a standard web interface; claim 3 recites functions of the information management service; claim 4 recites the layered architecture of the invention; claims 5 and 17 recites program identifiers to allow concurrent multiple programs to be performed; claims 6 and 18 recites receiving information from outside the collaborative environment; claims 7 and 19 recite additional information contained in the associative information model; claims 8 and 20 recites a client/server communication link; claims 9 and 13



enumerate preferred implemented domains; claim 10 recites that the database is an object-oriented database; claims 11 and 21 recites that the associative information model is developed from a life cycle perspective and claim 15 recites use of HTML.

#### Discussion of Issues

A. Are claims 7, 11, 12, 16, 19 and 21 indefinite under 35 U.S.C. §112, second paragraph?

Claims 7, 11, 12, 16, 19 and 21 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite; the Examiner indicating that it is unclear whether the language following "associative" in each of these claims are part of the claimed invention. Although not so indicated in the Advisory action of October 26, 2004, it is believed that this ground of rejection has been (or should have been) overcome. As pointed out in the response filed September 10, 2004, (which is hereby fully incorporated by reference) the word "associative" appears in these claims (and others, such as claim 1 which is not included in this rejection) only in the context of the phrase "associative information model" which is clearly recited as a portion or characteristic of the database which is, in turn, clearly recited as an element of the invention in claims 7, 11, 16, 19 and 21 and associative information model is clearly recited as the result of a step of claim 12. It is respectfully submitted to be well-established that a claim complies with 35 U.S.C. §112, second paragraph, if the scope of the claim can be reasonably determined. The scope of the claims included within this ground of rejection is abundantly clear and no ambiguity is engendered by the use of the word "associative, particularly as part of terminology well-defined in the specification.

No clarification of the Examiner's position has been provided in the Advisory Action and the amendment to claim 16 has been entered in regard to a possible source of ambiguity previously in that claim. Rather, this ground of rejection and the Examiner's comments in support thereof appear, on the one hand, to indicate a continued lack of understanding of a basic and distinctive feature of the invention and, on the other hand, to buttress the rejection based on prior art since the data models of Hara et al. and/or McQuay do not appear to have any function of associating different domains and/or domain-specific tools. Therefore, it is respectfully submitted that this ground of rejection is untenable and reversal thereof is respectfully requested.

B. Is the subject matter of claims 1 - 21 the same as (or not patentably distinct from the subject matter claimed in U. S. Patent Application 09/666,545?

It is also respectfully submitted that, although not so indicated in the Advisory Action, this ground of rejection has been or should have been overcome by the response filed September 10, 2004. It was pointed out therein that the statement of the rejection confuses the two recognized bases for a double-patenting rejection and does not make a *prima facie* demonstration of the propriety of either in regard to any of claims 1 - 21. It was also pointed out therein that while general disclosure of using a catalog as a perfecting feature of the present invention on page 30 of the present specification, no claims of the present application are directed thereto whereas all claims of 09/666,545 are directed and limited to the catalog feature and referred forms thereof. For comparison with the present claims

provided in the Appendix to this Appeal Brief, the independent claims of 09/666,545 are set out below (emphasis added).

1. (Previously Presented) A computer implemented product catalog for use in a web-centric collaborative engineering environment (CEE) for providing an inter-enterprise collaborative mechanism for organizations developing and maintaining complex system products, the CEE providing a federated architecture linking multiple systems and applications together to enable collaboration among enterprise members, comprising:

an object oriented database management system (ODBMS) managing an associative object model (product model) for providing a persistent understanding of product and program information, assets and tools available in the enterprise;

a plurality of part objects forming a product catalog, the part objects being defined by the product model and stored in the ODBMS, wherein each part object has intrinsic characteristics corresponding to a plurality of default values, the product catalog providing an application independent means for supporting engineering tools through intelligent interfaces;

means for generating part references, where a part reference refers to a corresponding part object in the product **catalog**, and wherein the part reference has characteristics customized for a project that

override or extend the intrinsic characteristics of its corresponding part object; and

means for linking members of the enterprise with part objects and customized part references via a collaborative engineering environment (CEE), the CEE having a framework for collaboration which provides access control, security, search mechanisms, concurrency control, versioning, information structuring, information mapping and exchange, wherein the information available to each member is information necessary for the member to complete role and team based tasks, and wherein the linking means comprises a plurality of tools, each tool communicating information with the ODBMS.

11. A method for customizing a product catalog for use by a project in a collaborative engineering environment (CEE) which provides an inter-enterprise collaborative mechanism for organizations developing and maintaining complex system products, and provides a federated architecture linking multiple systems and applications together to enable collaboration among enterprise members, comprising:

generating a product model for the project, wherein the product model defines project related informational elements and their corresponding characteristics, and wherein the project related informational elements may differ based on domain area;

identifying elements (parts) existing in a enterprise-wide product **catalog**;

customizing the existing parts for the project, by referring to default characteristics of the existing parts and when desired specifying overriding or extending part characteristics unique to the project;

if necessary to fully implement the project product model, providing new parts for the product catalog; and

integrating the project product model with domain-specific tools and application used by members of the enterprise, thereby enabling collaboration among enterprise members who have immediate access to information stored in the ODBMS by other members, wherein each member performs domain specific tasks using customized tools and applications and stores results of their performed tasks in the ODBMS, thereby allowing access of their information by other members of the enterprise.

12. (Original) A method as recited in claim 11, wherein the product catalog utilized for identifying parts in the identifying step and providing new parts in the providing steps comprises:

an object oriented database management system (ODBMS) managing an associative object model (product model) for providing a persistent understanding of product and program information, assets and tools available in the enterprise;

a plurality of part objects forming a product **catalog**, the part objects being defined by the product model and stored in the ODBMS, wherein each part object has default characteristics corresponding to a default environment;

means for generating part references, where a part reference refers to a corresponding part object in the product catalog, and wherein the part reference has characteristics customized for a project that override the default characteristics of its corresponding part object; and

means for linking members of the enterprise with part objects and customized part references via a collaborative engineering environment (CEE), the CEE having a framework for collaboration which provides access control, security, search mechanisms, concurrency control, versioning, information structuring, information mapping and exchange, wherein the information available to each member is information necessary for the member to complete role and team based tasks, and wherein the linking means comprises a plurality of tools, each tool communicating information with the ODBMS.

Accordingly, it is respectfully submitted that the claims of this application do not claim the same subject matter as 09/666,545 and the claimed subject matter of the two applications is clearly and patentably distinct. Therefore, reversal of this ground of rejection is

respectfully requested.

C. Is the subject matter of claims 1 - 21 obvious over the combined teachings of Hara et al. and McQuay under 35 U.S.C. §103?

#### The Examiner's Application of the Prior Art

In summary of the Examiner's extended remarks, the Examiner observes that Hara et al. provides notification to users when a document has been changed, asserts that Hara et al. teaches an information transformation service and an information management service but admits that Hara et al. does not teach an application but Relies on McQuay to do so and concludes that "it would be obvious to use Hara et al. to modify McQuay" (sic). The Examiner cites many passages of the applied references in regard to language similar to some language of the claims and which are largely generalized goals of any CEE arrangement. The Examiner asserts that McQuay teaches an associative information model at page 256.

#### The Differences Between the Prior Art and the Claimed Invention

The Examiner's stated position in support of this ground of rejection clearly glosses or ignores several basic and distinguishing features of the invention, as claimed. Specifically, the Examiner literally appears to propose to modification of McQuay to be a document-centric approach; and approach avoided by the present invention. While the converse (e.g. to modify Hara et al. in accordance with McQuay) may be plausible (although contrary to In re Gordon, 221 USPQ 1125 (Fed. Circ.,

1984)), McQuay clearly does not teach or suggest providing an associative information model and particularly not as a common database (or portion thereof) accessible by domain-specific tools through an information transformation service which provides not only the function of supporting immediate access to data developed by those domain-specific tools but facilitating implementation of additional domains. There is no suggestion whatever in McQuay of providing such a common database as a way of resolving "disparate data format issues" although McQuay acknowledges a need to do so in order to support virtual prototyping. The use of middleware for such a purpose, rather than the development of an associative information model as a common database or portion thereof, as claimed, suggests that simple format conversion in the course of communication is all that McQuay contemplates in this regard. Therefore, McQuay clearly does not teach what the Examiner attributes to it and, while suggesting a virtual prototyping alternative to a document-centric system such as that of Hara et al., clearly does not provide evidence of a level of ordinary skill in the art which would support the conclusion of obviousness which the Examiner has asserted but not demonstrated by a logical line of reasoning, particularly since the combination of Hara et al. and McQuay, even if properly combined, do not lead to an expectation of success in providing flexible and easily extensible cross-domain collaboration using direct results of operations by domain-specific tools. Accordingly, it is respectfully submitted that the Examiner has not made a *prima facie* demonstration of obviousness of any independent claim.

The dependent claims are distinguished from the applied prior art for the same reasons discussed above in



regard to the independent claims and further by virtue of the respective recitations thereof. For example, neither Hara et al nor McQuay teaches or suggests customization of a standard web interface (claims 2 and 14), the data management facilities of claim 3, a layered architecture (claim 4), program identifiers for concurrent CEE (claim 5 or 17, external or additional information (claims 6, 7, 18 and 19), the allocation of services between client and server of claim 8, the interface implementations of claim 9, or a life cycle perspective of claim 11 or 20, immediate information exchange of claim 13. Therefore, The Examiner has not made a *prima facie* demonstration of the propriety of the rejection as to the subject matter of any of these claims.

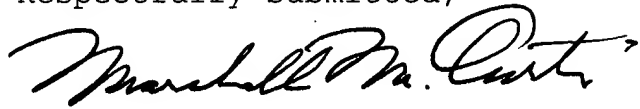
Accordingly, it is respectfully submitted that this ground of rejection based on Hara et al. and McQuay is clearly in error and reversal thereof is respectfully requested.

#### CONCLUSION

In view of the foregoing it is clear that none of the asserted grounds of rejections of claims in the present application are tenable and that all are clearly in error. Further, the Examiner appears to have improperly used the rejection under 35 U.S.C. §112 to improperly buttress the rejection under 35 U.S.C. §103 and to gloss or ignore explicit recitations of the claims in regard to a major and distinctive feature of the invention. Further, the Examiner has confused the recognized bases for double patenting rejections and failed to make a *prima facie* showing of the propriety of either while clearly not properly evaluating the claimed subject matter of the present application and that of

09/666,545. Accordingly, reversal of the Examiner as to each ground of rejection in the final action of July 2, 2004, is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Marshall M. Curtis". The signature is fluid and cursive, with the first name "Marshall" being the most prominent part.

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APPENDIX

THE CLAIMS ON APPEAL

The claims on appeal are as follows:

1. (Original) A computer implemented collaborative engineering environment (CEE) for providing an inter-enterprise collaborative mechanism for organizations developing and maintaining complex system products, the CEE providing a federated architecture linking multiple systems and applications together to enable collaboration among enterprise members, comprising:

a database defined by an associative information model for providing a persistent understanding of product and program information, assets and tools available in the enterprise;

an information management service providing controlled access to the database for collaboration and;

an information transformation service receiving, sending and formatting data and acting as a bi-directional link between the database and members of the enterprise, wherein access to the data in the database is managed by the information management service, and wherein the information transformation service provides information structuring, and information mapping and exchange for domain-specific tools; and

at least one domain user interface linking members of a domain in the enterprise with information in the database, wherein the information available to each member is information necessary for the member to complete role and team based tasks, and wherein a domain user interface comprises access to at least one domain-specific tool, wherein each tool communicates information

with the database via the information transformation service,

wherein members have immediate access to data generated by any member of the enterprise, as authorized by the associative information model defining database access and control.

2. (Original) A CEE as recited in claim 1, wherein each member communicates with the enterprise for collaboration using a standard web interface, the web interface being customized for programs, roles and teams.

3. (Original) A CEE as recited in claim 1, wherein the information management service provides access control, security, search mechanisms, concurrency control, and versioning for data in the database.

4. (Original) A CEE as recited in claim 1, wherein the CEE is built with a layered software architecture comprising a database management system (DBMS), a product data management system (PDM) augmenting the DBMS with engineering specific information management capabilities, and the information transformation service utilizes an extensible infrastructure for interfacing engineering or management applications into the PDM environment.

5. (Original) A CEE as recited in claim 1, wherein data in the database have a corresponding program identifier, thereby allowing multiple programs within the enterprise to access a same CEE.

6. (Original) A CEE as recited in claim 1, wherein the CEE sends/receives information to users in a domain area, the domain area not being implemented in the collaboration environment.

7. (Original) A CEE as recited in claim 6, wherein the database associative information model defines data for domain areas unintegrated into the CEE by a domain user interface.

8. (Original) A CEE as recited in claim 1, wherein the CEE is implemented using client/server technology, the database and information management services being on a server and domain user interfaces being on at least one client, and tools required by a domain being on one or both of the client and server.

9. (Original) A CEE as recited in claim 1, wherein a domain user interface is implemented for one or more domain areas in the group of proposal teams, program management, system engineers, software developers, hardware developers, system integrators, testing and integration engineers, support engineers, sub-contractors, teammates, suppliers and partners, users and customers.

10. (Original) A CEE as recited in claim 1, wherein the database is object-oriented, facilitating reuse of standard elements among programs and organizations within the enterprise.

11. (Original) A CEE as recited in claim 1, wherein the associative information model is developed from a life cycle perspective of implemented domain models, each domain model overlaying system views (functional, physical, operational) and system schedules (development, production, technology refreshment/insertion, support, platform availability) with the program infrastructure (development, production, support), and wherein the domain models define relationships and standard parameters dynamically modifiable for multiple programs, projects, or teams.

12. (Original) A method for implementing and using a computer implemented collaborative engineering environment, said method comprising:

- specifying and documenting an associative information model for an enterprise to capture physical, functional and environmental system requirements, wherein domain experts provide input into the specifying step for their particular domain;

- mapping the captured requirements into a database schema for a product data management system (PDM);

- generating an information transformation service between data to be stored in a database managed by the product data management system and tools used by domain specialists in performance of domain tasks, wherein information is stored in the database by various members of the enterprise based on the associative information model for the various member's domain area;

- accessing data in the database by members of the enterprise, wherein the data accessed is part of a current baseline and the data retrieved is current for all members accessed the data; and

- performing domain tasks by a member of the

enterprise using domain specific applications, wherein results from the domain specific application are properly formatted by the information transformation service and stored in the database managed by the PDM, the data being immediately accessible to other members of the enterprise.

13. (Original) A method as recited in claim 12, wherein the CEE enables immediate information exchange in the access step for one or more domains in the group of proposal teams, program management, system engineers, software developers, hardware developers, system integrators, test and integration engineers, support engineers, teammates, partners, subcontractors, suppliers, users, and customers.

14. (Original) A method as recited in claim 13, wherein the access step uses a customizable standard web-based interface to provide members of the enterprise access to collaborative information.

15. (Original) A method as recited in claim 14, wherein the standard web-based interface utilizes dynamic Hypertext Markup Language (HTML) generation for program customization.

16. (Amended) A computer implemented web-centric collaborative engineering environment (CEE) implemented using client/server technology for providing an inter-enterprise collaborative mechanism for organizations developing, integrating or maintaining complex system products, the CEE providing a federated architecture linking multiple systems and applications together to enable collaboration among enterprise members, comprising:

an object oriented database facilitating reuse of standard elements among programs and organizations within the enterprise, the database residing on a server computer and defined by an associative information model, said object oriented database being augmented with engineering specific information management capabilities for providing a persistent understanding of product and program information, assets and tools available in the enterprise, wherein the associative information model defines physical, functional and operational attributes of elements within at least one domain area in the enterprise and relationships among the elements include a corresponding program, role or team;

an information management service residing on a server computer providing controlled access to the database for collaboration using an access control scheme defined by policies of the enterprise, the information management service using an object oriented database management system for access and control of the database and;

an information transformation service utilizing an extensible infrastructure to interface engineering or management applications used in a domain into the CEE environment and acting as a bi-directional link, the information transformation service receiving, sending and



formatting data between the database and members of the enterprise, wherein access to the data in the database is managed by the information management service, and wherein the information transformation service provides information structuring, and information mapping and exchange for domain-specific tools; and

at least one domain user interface residing on at least one client computer linking members of the enterprise with information in the database, wherein the information available to each member is information necessary for the member to complete role and team based tasks, and wherein a domain user interface allows a member access to at least one domain-specific tool, wherein each tool communicates necessary information with the database via the information transformation service, and wherein an implemented domain user interface is customized for a domain area in the group of proposal teams, program management, system engineers, software developers, hardware developers, system integrators, testing and integration engineers, support engineers, sub-contractors, teammates, suppliers and partners, users and customers,

wherein domain members have immediate access to data generated by any member of the enterprise, regardless of domain, as authorized by the associative information model defining database access and control and controlled by the information management service, and each member communicates with the enterprise for collaboration using a standard web interface, the web interface being customized for programs, roles and teams.

17. (Original) A CEE as recited in claim 16, wherein data in the database have a corresponding program identifier, thereby allowing multiple programs within the enterprise to access a same CEE.

18. (Original) A CEE as recited in claim 16, wherein the CEE sends/receives information to users in a domain area, the domain area not being implemented in the collaboration environment.

19. (Original) A CEE as recited in claim 16, wherein the database associative information model defines data for domain areas unintegrated into the CEE by a domain user interface.

20. (Original) A CEE as recited in claim 16, wherein the information transformation service performs some tasks on the server and some tasks on at least one client.

21. (Original) A CEE as recited in claim 16, wherein the associative information model is developed from a life cycle perspective of implemented domains models, each domain model overlaying system views and system schedules with the program infrastructure for development, production or support, and wherein the domain models define relationships and standard parameters dynamically modifiable for multiple programs, projects, or teams.